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IS 6175-4 (1991): Screwing Taps, Part 4: Long Shank Machine Screwing Taps for ISO Metric Screw Threads Sizes from M3 to M24 [PGD 32: Cutting tools]

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भारतीय मानक

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**भाग 4 आई एस ओ मीटरी पेंच चूड़ियों, साइज M3 से M24 तक शंक वाले
मशीन द्वारा चूड़ियाँ काटने वाले औजार — विशिष्ट**

Indian Standard
SCREWING TAPS

**PART 4 LONG SHANK MACHINE SCREWING TAPS FOR
ISO METRIC SCREW THREADS SIZES FROM M3 TO M24.—SPECIFICATION**

UDC 621.993.1 : 621.882.082.1

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Thread Cutting Taps and Dies Sectional Committee had been approved by the Production Engineering Division Council.

This standard for long shank machine screwing taps was first covered in IS 1988 : 1962 'Specification for screwing taps'. Later IS 1988 : 1962 was split into different parts and the contents of this standard was covered in IS 7821 : 1975. In this revision it has been covered under IS 6175 series.

- a) The dimensions for threaded portion of the taps have been deleted and now covered in IS 6173 (Part 1) : 1991. This was not covering for all the types of serial screwing taps and it was repeating in all the product standards, and
- b) A common sketch for both coarse and fine pitches given.

This standard is in full conformity with ISO 2283 : 1972 'Long shank machine taps with nominal diameter from 3 to 24 mm and 1/8 to 1 in' issued by the International Organization for Standardization (ISO).

The other Indian Standards on screwing taps of this series are:

IS 6175	Screwing taps
(Part 1) : 1991	Part 1 Hand and short machine screwing taps for ISO metric screw threads sizes M1 to M2·5 — Specification (<i>second revision</i>)
(Part 2) : 1991	Part 2 Hand and short machine screwing taps for ISO metric screw threads sizes M3 to M10 — Specification (<i>second revision</i>)
(Part 3) : 1991	Part 3 Hand and short machine screwing taps for ISO metric screw threads sizes M3 to M68 with coarse pitches and M3 to M100 with fine pitches — Specification (<i>second revision</i>)
(Part 5) : 1991	Part 5 Nut screwing taps for ISO metric screw threads sizes M3 to M68 with coarse pitches — Specification (superseding IS 6174)
(Part 6) : 1991	Part 6 Screwng taps for pipe threads parallel G series — Specification (superseding IS 6172)
(Part 7) : 1991	Part 7 Screwng taps for pipe threads parallel Rp series — Specification (superseding IS 6172)
(Part 8) : 1991	Part 8 Screwng taps for pipe threads taper Rc series — Specification (superseding IS 7796)

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SCREWING TAPS

PART 4 LONG SHANK MACHINE SCREWING TAPS FOR ISO METRIC SCREW THREADS SIZES FROM M3 TO M24 — SPECIFICATION

1 SCOPE

This standard covers the dimensions and requirements for long shank machine screwing taps for ISO metric screw threads in the size range M3 to M24 with coarse and fine pitches, conforming to IS 4218 (Parts 1 to 6) : 1976 and with a relieved shank.

<i>IS No.</i>	<i>Title</i>
4218	ISO metric screw threads:
(Part 1) : 1976	Part 1 Basic and design profiles (<i>first revision</i>)
(Part 2) : 1976	Part 2 Diameter pitch combinations (<i>first revision</i>)
(Part 3) : 1976	Part 3 Basic dimensions for design profiles (<i>first revision</i>)
(Part 4) : 1976	Part 4 Tolerancing system (<i>first revision</i>)
(Part 5) : 1979	Part 5 Tolerances (<i>first revision</i>)
(Part 6) : 1978	Part 6 Limits of sizes for commercial bolts and nuts (diameter range 1 to 52 mm) (<i>first revision</i>)

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
6171 : 1991	Screwing taps — Technical supply conditions
6173 (Part 1) : 1991	Screwing taps — Dimensions and tolerances on threaded portion of screwing taps : Part 1 For ISO metric screw threads
6175 (Part 3) : 1991	Screwing taps : Part 3 Hand and short machine screwing taps for ISO metric screw threads sizes M3 to M68 with coarse pitches and M3 to M100 with fine pitches

3 GENERAL DIMENSIONS

3.1 Dimensions of screwing taps for ISO metric screw threads, coarse pitch shall be as given in Table 1 read with Fig. 1.

3.2 Dimensions of screwing taps for ISO metric screw threads, fine pitch shall be as given in Table 2 read with Fig. 1.

NOTE — Other dimensions for types B, C and D are as per Type A. The figure is indicative of dimensions only and does not specify design features.

4 TOLERANCES

4.1 Tolerances on threaded length and overall length and radial run-out shall be according to IS 6171 : 1991.

4.2 Dimensions and tolerances on threaded portion of screwing taps shall be according to IS 6173 (Part 1) : 1991.

5 MATERIAL

The material of screwing tap shall be as given in 4 of IS 6171 : 1991.

6 HARDNESS

The hardness of screwing tap shall be as given in 5 of IS 6171 : 1991.

7 GENERAL REQUIREMENTS

7.1 The number of flutes shall be as given below.

7.2 For requirements not covered in this standard, shall conform to the requirements of IS 6171 : 1991.

8 DESIGNATION

8.1 Screwng taps shall be designated by the name, nominal size, number of this standard and material from which it is made.

A non-serial screwing tap of Type A, size M10 with tolerance class 6H and made from high speed steel (HSS) shall be designated as:

Screwing Tap IS 6175 (Part 4), A M10 HSS

8.2 When the screwing tap is desired for class of tolerance other than 6H, class of tolerance 4H or 7H or 7H cut threads as appropriate, shall be mentioned in the designation immediately after the size.

9 MARKING

9.1 Screwng taps shall be marked with appropriate information as per 10 of IS 6171 : 1991.

N9/ (N6/)

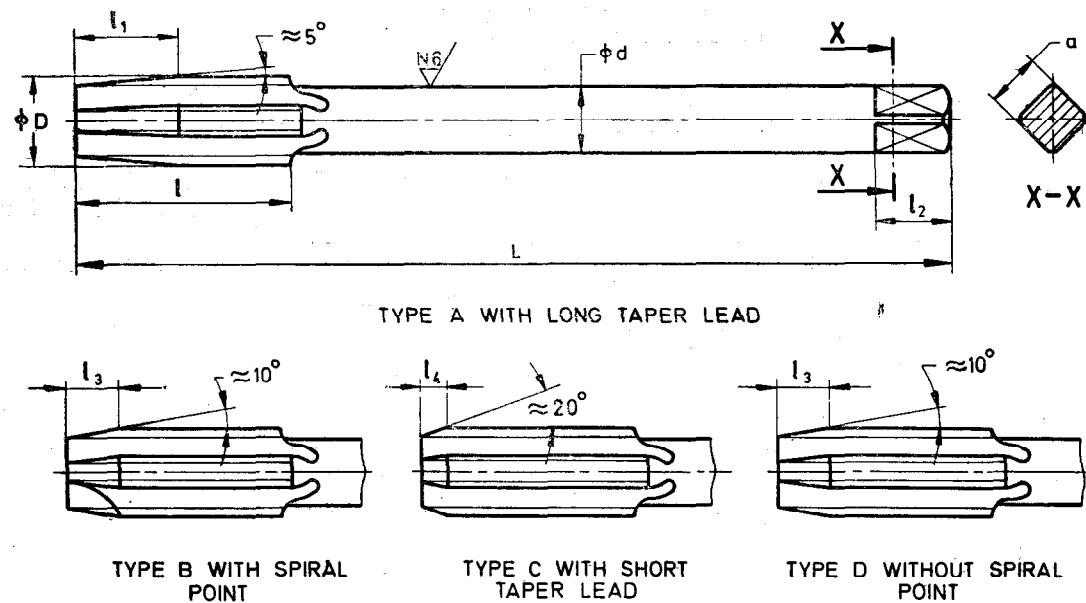


FIG. 1 DIMENSIONS FOR LONG SHANK MACHINE SCREWING TAPS

Table 1 Dimensions of Screwing Taps for ISO Metric Screw Threads Coarse Pitch
(Clause 3.1 and Fig. 1)

All dimensions in millimetres.

Designation	Nominal Dia <i>D</i>	Pitch	<i>d</i> h9	<i>l</i>	<i>l</i> ₁	<i>l</i> ₃	<i>l</i> ₄	<i>L</i>	Square	
									<i>a</i> h11	<i>l</i> ₂
M3	3	0.5	2.24	11	4.0	2.0	1.0	66	1.80	4
(M3.5)	3.5	0.6	2.50	13	4.8	2.4	1.2	68	2.00	4
M4	4	0.7	3.15	13	5.6	2.8	1.4	73	2.50	5
(M4.5)	4.5	0.75	3.55	13	5.6	3.0	1.4	73	2.80	5
M5	5	0.8	4.00	16	6.4	3.2	1.6	79	3.15	6
M6	6	1	4.50	19	8.0	4.0	2.0	89	3.55	6
(M7)	7	1	5.60	19	8.0	4.0	2.0	89	4.50	7
M8	8	1.25	6.30	22	10.0	5.0	2.5	97	5.00	8
(M9)	9	1.25	7.10	22	10.0	5.0	2.5	97	5.60	8
M10	10	1.5	8.00	24	12.0	6.0	3.0	108	6.30	9
(M11)	11	1.5	8.00	25	12.0	6.0	3.0	115	6.30	9
M12	12	1.75	9.00	29	14.0	7.0	3.5	119	7.10	10
(M14)	14	2	11.20	30	16.0	8.0	4.0	127	9.00	12
M16	16	2	12.50	32	16.0	8.0	4.0	137	10.00	13
(M18)	18	2.5	14.00	37	20.0	10.0	5.0	149	11.20	14
M20	20	2.5	14.00	37	20.0	10.0	5.0	149	11.20	14
(M22)	22	2.5	16.00	38	20.0	10.0	5.0	158	12.50	16
M24	42	3	18.00	45	24.0	12.0	6.0	172	14.00	18

NOTES

1 Non-preferred sizes are given within parenthesis.

2 Where screwing taps with diameters larger than those covered by this standard are required, the threaded length shall be that given for the corresponding nominal diameters in IS 6175 (Part 3) : 1991 and length of shank (*L* — *l*) shall be increased by 50 percent.

Table 2 Dimensions of Screwing Taps for ISO Metric Screw Threads Fine Pitch
(Clause 3.2 and Fig. 1)

All dimensions in millimetres.

Designation	Nominal Dia <i>D</i>	Pitch	<i>d</i> h9	<i>l</i>	<i>l</i>₁	<i>l</i>₃	<i>l</i>₄	<i>L</i>	Square	
									<i>a</i> h11	<i>l</i>₂
M3 × 0.35	3	0.35	2.24	11	2.8	1.4	0.7	66	1.80	4
(M3.5 × 0.35)	3.5	0.35	2.50	13	2.8	1.4	0.7	68	2.00	4
M4 × 0.5	4	0.5	3.15	13	4.0	2.0	1.0	73	2.50	5
(M4.5 × 0.5)	4.5	0.5	3.55	13	4.0	2.0	1.0	73	2.80	5
M5 × 0.5	5	0.5	4.00	16	4.0	2.0	1.0	79	3.15	6
(M5.5 × 0.5)	5.5	0.5	4.00	17	4.0	2.0	1.0	84	3.15	6
M6 × 0.75	6	0.75	4.50	19	6.0	3.0	1.5	89	3.55	6
(M7 × 0.75)	7	0.75	5.60	19	6.0	3.0	1.5	89	4.50	7
M8 × 0.75	8	0.75	6.30	16	8.0	4.0	2.0	91	5.00	8
M8 × 1	8	1	6.30	19	8.0	4.0	2.0	97	5.00	8
(M9 × 0.75)	9	0.75	7.10	16	8.0	4.0	2.0	94	5.60	8
(M9 × 1)	9	1	7.10	19	8.0	4.0	2.0	97	5.60	8
M10 × 0.75	10	0.75	8.00	17	8.0	4.0	2.0	104	6.30	9
M10 × 1	10	1	8.00	20	8.0	4.0	2.0	108	6.30	9
M10 × 1.25	10	1.25	8.00	20	8.0	4.0	2.0	108	6.30	9
(M11 × 0.75)	11	0.75	8.00	20	8.0	4.0	2.0	110	6.30	9
(M11 × 1)	11	1	8.00	20	9.0	4.0	2.0	110	6.30	9
M12 × 1	12	1	9.00	20	8.0	4.0	2.0	110	7.10	10
M12 × 1.25	12	1.25	9.00	24	8.0	4.0	2.0	119	7.10	10
M12 × 1.5	12	1.5	9.00	29	12.0	6.0	3.0	119	7.10	10
(M14 × 1)	14	1	11.20	22	8.0	4.0	2.0	124	9.00	12
(M14 × 1.25)	14	1.25	11.20	25	8.0	4.0	2.0	127	9.00	12
(M14 × 1.5)	14	1.5	11.20	30	12.0	6.0	3.0	127	9.00	12
(M15 × 1)	15	1	11.20	22	12.0	6.0	3.0	124	9.00	12
(M15 × 1.5)	15	1.5	11.20	30	12.0	6.0	3.0	127	9.00	12
M16 × 1	16	1	12.50	22	12.0	6.0	3.0	127	10.00	13
M16 × 1.5	16	1.5	12.50	32	12.0	6.0	3.0	137	10.00	13
(M17 × 1)	17	1	12.50	22	12.0	6.0	3.0	127	10.00	13
(M17 × 1.5)	17	1.5	12.50	32	12.0	6.0	3.0	137	10.00	13
(M18 × 1)	18	1	14.00	22	12.0	6.0	3.0	135	11.20	14
(M18 × 1.5)	18	1.5	14.00	29	12.0	6.0	3.0	142	11.20	14
(M18 × 2)	18	2	14.00	37	16.0	8.0	4.0	149	11.20	14
M20 × 1	20	1	14.00	27	12.0	6.0	3.0	140	11.20	14
M20 × 1.5	20	1.5	14.00	29	12.0	6.0	3.0	142	11.20	14
M20 × 2	20	2	14.00	37	16.0	8.0	4.0	149	11.20	14
(M22 × 1)	22	1	16.00	29	12.0	6.0	3.0	149	12.50	16
(M22 × 1.5)	22	1.5	16.00	33	12.0	6.0	3.0	153	12.50	16
(M22 × 2)	22	2	16.00	38	16.0	8.0	4.0	158	12.50	16
M24 × 1.5	24	1.5	18.00	35	12.0	6.0	3.0	172	14.00	18
M24 × 2	24	2	18.00	35	16.0	8.0	4.0	172	14.00	18

NOTES

1 Non-preferred sizes are given in parenthesis.

2 Where screwing taps with diameters larger than those covered by this standard are required, the threaded length shall be that given for the corresponding nominal diameters in IS 6175 (Part 3) : 1989 and length of shank (*L* — *l*) shall be increased by 50 percent.

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BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksantha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

87 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

53 38 43

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

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**AMENDMENT NO. 1 SEPTEMBER 1993
TO**

IS 6175 (Part 4) : 1991 SCREWING TAPS

**PART 4 LONG SHANK MACHINE SCREWING TAPS FOR ISO
METRIC SCREW THREADS SIZES FROM M3 TO M24 —
SPECIFICATION**

(*Page 1, clause 2*) — Substitute ‘IS 6171 : 1992 Screwing Taps — Technical Supply Conditions (*first revision*)’ for ‘IS 6171 : 1991 Screwing Taps — Technical Supply Conditions’.

(*Page 1, clauses 4.1, 5, 6, 7.2 and 9.1*) — Substitute ‘IS 6171 : 1992’ for ‘IS 6171 : 1991’.

(*Page 2, clause 7.1*) — Substitute the following for the existing matter:

‘7.1 The number of flutes shall be as given below:

Diameter (mm)		Number of flutes	
From	To	Type A, C, & D	Type B
3	12	3 or 4	2 or 3
14	16	3 or 4	3 or 4
18	24	4 or 6	3 or 4

(PED 13)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 JANUARY 1996
TO
IS 6175 (Part 4) : 1991 SCREWING TAPS
PART 4 LONG SHANK MACHINE SCREWING TAPS FOR ISO
METRIC SCREW THREADS SIZES FROM M3 TO M24 —
SPECIFICATION

Typographical errors have crept in the text of this standard as far as 'year of printing' is concerned. Year of printing shall be read as '1992' in place of '1991' in the text of the following Indian Standards wherever it appears:

IS 6171, 6173 (Part 1), IS 6175 (Parts 1 to 3 and Parts 6 to 8).

(*Page 1, clause 1, line 5*) — Delete ':1976'.

(*Page 2, Table 1, col 2, last row*) — Substitute '24' for '42'.

(*Page 3, Table 2, col 6, row 17*) — Substitute '8.0' for '9.0'.

(PE 10)

Reprography Unit, BIS, New Delhi, India